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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/914,650	02/27/2002	Eric Yijing Zhang	Q66048	9665

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EXAMINER
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KINNEY, ANNA L

ART UNIT	PAPER NUMBER
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1731

DATE MAILED: 06/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/914,650

Applicant(s)

ZHANG ET AL.

Examiner

Anna Kinney

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 May 2005.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-13 is/are rejected.  
7) ☒ Claim(s) 5 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 31 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 2, 2005 has been entered.

### ***Specification***

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because the phraseology "said" is used in the abstract, and the length exceeds 150 words. Correction is required. See MPEP § 608.01(b).

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The following title is

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suggested: Method for bleaching mechanical and chemithermomechanical pulp downstream of refiner and upstream of screening.

The disclosure is objected to because of the following informalities: On page 7, line 15, the word "bleaching" is missing an "a"; and on line 22, the word "thermomechanical" is missing a "c". On page 13, line 25, a period is missing at the end of the line, just prior to the word "A".

Appropriate correction is required.

### ***Claim Objections***

Claim 5 is objected to because of the following informalities: the word "upstream" in the second line of the claim has an extra "t". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 through 13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 1 contains the limitations "drastic condition from the aspect of temperature", and "minimized oxygen access". The disclosure contains no indication as to what constitutes a "drastic condition from the aspect of temperature", or "minimized oxygen access". The disclosure indicates that a reductive bleaching agent can be

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added anywhere between the last refiner in a series and the screening department. It further indicates that the temperature in the last refiner can be expected to range from 130 to 160°C. Based on the temperatures described at the outlets of other process equipment in the disclosure, the Examiner anticipates the temperature at the outlet of the refiner to be approximately 130°C. The last temperature range cited before the screening department is 70 to 80°C at the latency chest. Therefore, the Examiner must consider drastic temperature conditions to be anything within the range of 70 to 130°C. Claims 2 through 13 depend upon claim 1, and are therefore also subject to this rejection.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 through 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitations "the given drastic condition" and "the given minimized oxygen access" in lines 14 and 15 of the claim. There is insufficient antecedent basis for this limitation in the claim. No previous discussion of a drastic condition or oxygen access is provided in the claim. Claims 2 through 13 depend upon claim 1, and are therefore also subject to this rejection.

Claim 1 lists a number of steps, some of which are optional. The Examiner finds the recitation of "a steam separator" unclear because the steps are not laid out in such a way as to clearly delineate a steam separator as a separate step from the preceding

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optional chemical treatment system. The Examiner suggests identifying each distinct step or choice of steps with a number or letter (i.e., (i) or (a)), or providing a semicolon at the end of each distinct step or choice of steps. Claims 2 through 13 depend upon claim 1, and are therefore also subject to this rejection.

The terms "very high" and "low" in claim 11 are relative terms which render the claim indefinite. The terms "very high" and "low" are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Therefore, the temperature and concentration of the pulp suspension at the location of bleach addition and immediately downstream are indeterminate. Claim 13 depends upon claim 11, and is therefore also subject to this rejection.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 through 7 and 11 through 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over ADMITTED PRIOR ART (Jepson claim 1 of instant application, page 5 of disclosure, Example 1 of disclosure, pages 13 to 15, and Figure 1) in view of MADISON et al (U.S. Patent 3,186,899), WEST (U.S. Patent 3,467,574), and GRIMSLEY et al (U.S. Patent 4,863,564).

With respect to claim 1, the ADMITTED PRIOR ART is an implied admission that the subject matter of the preamble is the prior art work of another, see MPEP 2129 III. The ADMITTED PRIOR ART discloses a method for manufacturing bleached mechanical and chemithermomechanical pulp wherein a starting material in form of lignocellulose material, preferably wood in chip form, is caused to pass through at least one preheater or through a chemical treatment system, and a steam separator, and then through a single refining stage containing one refiner or two refiners with each refiner in the single refining stage being directly followed by steam separation and with only steam separation existing between refiners, in which the lignocellulose material is converted to a pulp suspension which, subsequent to the most downstream of said steam separation, is passed at least to one storage vessel and to a screening department from which the major part of the pulp suspension is taken out as an essentially finished bleached product or is taken out and passed to further treatment stages; and in which reductive bleaching agent as the only bleaching agent is added to the advancing pulp suspension without the use of a bleaching tower or like means (Jepson claim).

The ADMITTED PRIOR ART does not disclose expressly adding the bleaching agent at a location downstream of the most downstream refiner and upstream of the screening department; and bleaching said pulp under the given drastic condition from the aspect of temperature and the given minimized oxygen access at said location and immediately downstream of said location.

MADISON et al discloses adding the bleaching agent (col. 2, lines 24 to 25) at a location downstream of the most downstream refiner (col. 2, lines 25 to 26) and upstream of the screening department (col. 2, lines 2 to 5). MADISON et al does not disclose expressly bleaching said pulp under the given drastic condition from the aspect of temperature and the given minimized oxygen access at said location and immediately downstream of said location.

WEST discloses bleaching pulp under the drastic condition of temperatures ranging from 65 to 100 °C or more (150 to 212 °F; col. 3, lines 6 to 11 and 17 to 23). WEST does not disclose expressly minimized oxygen access at said location and immediately downstream of said location.

GRIMSLEY et al discloses minimized oxygen access at said location and immediately downstream of said location (Abstract, lines 3 to 6).

With respect to claim 2, ADMITTED PRIOR ART discloses adding complexing agent to the lignocellulose material (page 13, lines 27 to 29) upstream of said refiner.

With respect to claim 3, ADMITTED PRIOR ART discloses passing the pulp suspension to two refiners in series (Figure 1, items 6 and 10, and page 14, lines 1 to 5).

With respect to claim 5, ADMITTED PRIOR ART discloses also passing the pulp suspension to a slusher (latency pulper) located immediately upstream of the storage vessel (the latency chest) (Figure 1, items 14 and 17, and page 14, lines 9 to 12).

With respect to claim 6, ADMITTED PRIOR ART discloses that a pump would be placed immediately downstream of the slusher (page 5, lines 6 to 7). Therefore, the



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Examiner assumes that the slusher of Example 1 is connected with a pump.

Furthermore, ADMITTED PRIOR ART discloses that it is conventional to deliver the bleaching agent to a pump (page 14, lines 28 to 30, and page 15, lines 9 to 10).

Therefore, the Examiner asserts that at the time of the invention, it would have been obvious to a person skilled in the art to add the bleaching agent to the pulp suspension in a pump located in connection with the slusher, said pump being caused to transport the pulp suspension to the storage vessel in a pipe.

With respect to claim 7, ADMITTED PRIOR ART discloses causing reject pulp suspension from the screening department (Figure 1, item 19) to pass through a refiner (Figure 1, item 28) and thereafter through a slusher (Figure 1, item 31) whereafter said reject pulp suspension is finally fed into the main pulp suspension flow, in the storage vessel (the latency chest) (Figure 1, item 17) (page 14, lines 18 to 21 and line 32 to page 15, line 3)).

With respect to claim 12, ADMITTED PRIOR ART discloses that the bleaching agent is dithionite (page 14, line 29).

The ADMITTED PRIOR ART does not disclose expressly adding complexing agent to the pulp suspension immediately upstream of and/or in said second refiner; that the temperature of the pulp suspension is very high from a bleaching aspect at the location at which the bleaching agent is added and immediately downstream of said location or that the solid content or concentration is low at said location; or that the temperature of the pulp suspension is 80 to 90°C at the location at which the bleaching

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agent is added and immediately downstream of said location, or that the solid content or concentration is 2 to 4% at said location.

With respect to claim 4, WEST discloses adding complexing agent to the pulp suspension (col. 6, lines 25 to 28) immediately upstream of and/or in said second refiner (col. 4, lines 14 to 22).

With respect to claim 11, WEST discloses that the temperature of the pulp suspension is very high from a bleaching aspect at the location at which the bleaching agent is added and immediately downstream of said location (col. 3, lines 54 to 64) and in that the solid content or concentration is low at said location (col. 2, lines 22 to 23).

With respect to claim 13, WEST discloses that the temperature of the pulp suspension is 65 to over 100°C (col. 3, lines 54 to 64), which contains the claimed range of 80 to 90°C, at the location at which the bleaching agent is added and immediately downstream of said location, and in that the solid content or concentration is 3 to 5% in conventional hydrosulfite bleaching (col. 2, lines 22 to 23), which contains one specific point within the claimed range of 2 to 4%, at said location.

The ADMITTED PRIOR ART, MADISON et al, WEST, and GRIMSLEY et al are analogous art because they are from the same field of endeavor, that of bleaching mechanical pulp. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply a bleaching agent at the location described by MADISON et al (between the last refiner and the screening stage) to the pulp manufacturing method of the ADMITTED PRIOR ART under drastic temperature conditions, with the addition of a complexing agent, and at a low solid concentration as

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taught by WEST, and to minimize the access of oxygen as taught by GRIMSLEY et al, to obtain the invention as specified in claims 1 through 13.

The motivations for doing so would have been that the bleaching reaction is automatically speeded as a result of the pulp having become heated by the work done on it during the second refining stage (Madison, col. 2, lines 26 to 29); the temperature of the material is increased so that outgassing of oxygen-containing vapors deleterious to reduction bleaching takes place (West, col. 1, lines 15 to 17); it has been found to be highly desirable to maintain the temperature of the pulp above 150°F during the screening and cleaning operations to prevent any substantial brightness reversion (West, col. 5, lines 66 to 69); the presence or introduction of substantial amounts of oxygen into the pulp would rapidly destroy the effectiveness of the reducing bleaching agent (West, col. 3, lines 51 to 54); bleaching under anaerobic conditions and subsequently handling the bleached pulp under anaerobic conditions thereafter produces a significantly higher paper brightness which is retained after storage of the finished paper (Grimsley et al, col. 3, lines 1 to 8); dilution of the pulp has been found to be desirable in order to prevent brightness reversion which has been found to occur to a certain extent if the pulp is stored at high consistency (West, col. 5, lines 51 to 54); and chelating agents may be incorporated into the pulp prior to incorporation of the reducing bleaching agent to improve the stability of the hydrosulfite (WEST, col. 6, lines 25 to 28, and lines 34 to 35).

***Response to Arguments***

Applicant's arguments filed May 2, 2005 have been fully considered but they are not persuasive.

In response to applicant's arguments regarding the differences between the use of grinding and the use of chipping and refining to produce a pulp suspension, both methods mechanically pulp lignocellulosic material and produce a pulp suspension, which corresponds to the claim limitations (Remarks, pages 7 and 8; claim 1, lines 1 to 2 and 7).

In response to applicant's arguments regarding applicability to non-chemical treatment and chemithermomechanical treatment (Remarks, page 8), the claim as written provides for an option of a preheater or chemical treatment system (claim 1, lines 3 to 4), so the references are not required to teach both thermomechanical and chemithermomechanical treatment. In fact, this provides a such a teaching in the form of admitted prior art.

In response to applicant's arguments regarding the starting material of Madison and the starting material of the claims, the applicant failed to expressly define "lignocellulose material". The Examiner has interpreted the phrase to mean any material consisting of cellulose intimately associated with lignin, as is consistent with the definition in Webster's Unabridged Dictionary (Webster's Third New International® Dictionary, Unabridged, Copyright © 1993 Merriam-Webster, Incorporated). This would include both raw plant matter as well as incompletely delignified pulp (Remarks, pages 9 to 11).

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In response to applicant's arguments (Remarks, pages 9 to 11), the recitation "preferably wood in chip form" has not been given patentable weight because the recitation occurs in the preamble (claim 1, line 3). A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). In addition, this recitation is a preferred embodiment as written (using the term "preferably"). The claim is not limited to the preferred embodiment. Finally, the recitation has been implicitly admitted as prior art since it is incorporated in the Jepson preamble of claim 1. Even considering this, Madison refers to the use of wood chips as a starting material in the background, indicating that the invention is relevant to the processing of pulp from wood chips (col. 1, lines 26 to 30).

In response to applicant's argument that the references fail to show certain features of applicant's invention (Remarks, page 12), it is noted that the features upon which applicant relies (i.e., debarked logs of 3-4 metres) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

***Allowable Subject Matter***

Claims 8 through 10 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: the primary reason for allowance is the inclusion of the limitation regarding adding bleaching agent to reject pulp after the refiner and before introducing the pulp to the main flow.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 2,913,362 shows the use of chemical treatment followed by refining on screen rejects from non-wood pulp. U.S. Patent 3,830,688 shows screen rejects (sulfate pulp) refined and returned to a main stream bleaching process. U.S. Patent 5,916,417 shows bleaching of fractionation screen rejects. U.S. Publication 2003/0121625 A1 shows bleaching of mechanical and chemithermomechanical pulp using a reductive bleaching agent (dithionite) at high temperature and minimized oxygen access.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anna Kinney whose telephone number is (571) 272-8388. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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